REMARKS

Claims 1-41 are active in this application.

At the outset, Applicants wish to thank Examiner Kim for the helpful and courteous discussion with their undersigned Representative on June 3, 2004. During this discussion, the applicability of the data presented in the present specification was discussed as it relates to the disclosure of Hofrichter et al and the rejection under 35 U.S.C. §103(a). The content of this discussion reflected in the remarks set forth in this response.

The rejection of Claims 1-4, 12-20, 24-25, and 33-41 under 35 U.S.C. §103(a) over Hofrichter et al is traversed.

Hofrichter et al disclose an antiperspirant gel stick containing a gelling agent selected from 12-hydroxystearic aid, esters of 12-hydroxystearic aid, amides of 12-hydroxystearic aid, and mixtures thereof as a primary gelling agent and a n-acyl amino acid amide derivative as a secondary gallant (see Abstract).

The Examiner points to the very broad disclosure of n-acyl amino acid amide derivative provided in column 4, lines 35-43. The Examiner then asserts that all of the claimed compounds are encompassed by the generic formula taught in Hofricter et al. Applicants note that although Hofrichter et al may provide for the possibility of a compound within the scope of the claimed invention, Hofrichter et al fail to provide adequate motivation to select such a compound from the very broad genus disclosed therein, much less provide a reasonable expectation of the advantageous properties flowing therefrom. In fact, the Examiner has acknowledged the absence of a specific disclosure in Hofrichter et al of the claimed invention

noting: "applicant's claims require narrower scope than what US '424 suggests in his generic formula (column 4, lines 35-43) and US '424 fails to specifically mention the same species required by instant claims 3-4." (paper number 8, page 4, lines 19-21)

Not only do Hofrichter et al fail to explicitly name, suggest, or exemplify any species that falls within the scope of the present claims, the preferred species listed by Hofrichter et al at column 4, line 52 to column 5, line 2 would actually lead the artisan away from the range of R^3 in the present claims. As such there can be no motivation to select or obtain the claimed compounds (having R^3 represents a hydrocarbon group having 7 to 10 carbon atoms) from the broad genus of Hofrichter et al. This is particularly true when the artisan inspects the preferred species of Hofrichter et al at column 4, line 52 to column 5, line 2 and the Examples, in which the position corresponding to R^3 contains 11 carbon atoms or more. Moreover, based on the disclosure of Hofrichter et al the skilled artisan would have no means of envisioning the advantages flowing from the claimed invention as demonstrated in the present specification and highlighted in the Amendment and Request for Reconsideration filed on November 25, 2003 (reproduced herein below).

It is the Examiner's position that the claimed range of $R^3 = C_{7\text{-}10}$ is *prima facie* obvious in view of the disclosure by Hofrichter et al, which happens to include, amongst a broad genus, an n-acyl glutamic acid amide derivative in which the position corresponding to $R^3 = C_{1\text{-}26}$. Applicants note that it has been long held (see MPEP §§716.02-716.02(f)) that a *prima facie* case of obviousness can be overcome by a demonstration of unexpected results flowing from a claimed narrow range versus a broader range disclosed by the prior art (i.e., Hofricter et al). Despite the clear evidentiary showing of unexpected results provided by Applicants in the present specification, the Examiner has maintained this rejection. Specifically, Applicants note

that, as again noted below, the present specification compared the closest prior art compound to the compounds of the claimed invention that most closely approach that prior are compound. These data clearly show the superior gelling effect provided by the claimed compounds, as exemplified by N-2-ethylhexanoylglutamic acid dibutylamide, compared to N-lauroylglutamic acid dibutylamide, which represents Hofricter et al, as well as the superior gelling ability of N-decanoylglutamic acid dibutylamide (Example 6 of the present invention) compared to N-lauroylglutamic acid dibutylamide (Hofricter et al).

The Examiner disregards this evidence asserting that the unexpected superior gelling effect corresponds to an intended use and not the compound. Applicants disagree with this assertion by the Examiner. As is widely appreciated, a prominent way to demonstrate an unexpected property for a compound is by placing the compound into context by comparing the behavior of the compound of interest with a control compound under certain conditions and monitoring a specific property. In the present application, this comparison has been accomplished, for example, by preparing antiperspirant gel sticks that differ only by the n-acyl glutamic acid derivative employed and measuring the resulting gel strength using a rheometer (see below). Accordingly, the assay established is a single variable assay in which the variable *is* the n-acyl glutamic acid derivative. Therefore, the unexpected properties arising therefrom *are necessarily* related to the n-acyl glutamic acid derivative.

The aforementioned method of demonstrating nonobviousness is not new and finds support in the case law. The Examiner is directed to *Ex parte A*, 17 USPQ2d 1716 (Bd. Pat. App. & Inter. 1990) and *In re Papesch*, 137 USPQ 43 (CCPA 1963), **copies enclosed herewith**. In *Ex parte A* unexpected superior therapeutic activity of the *claimed compound* against anaerobic bacteria (*i.e.*, intended use) was sufficient to rebut *prima facie* obviousness even

though there was no evidence that the compound was effective against all bacteria. In *In re Papesch*, the rejection of the claims to a *compound* structurally similar to the prior art compound was reversed because the claimed compound unexpectedly possessed anti-inflammatory properties (*i.e.*, intended use) not possessed by the prior art compound. Therefore, as in *Ex parte A* and *In re Papesch* the evidentiary showing of unexpected results of the claimed compound is sufficient to rebut the *prima facie* case of obviousness.

For the Examiner's convenience, the following analysis/summary of the comparative data between the claimed invention and the disclosure of Hofrichter et al is reproduced from the Amendment and Request for Reconsideration filed on November 25, 2003:

The presently claimed compounds have a high gelling ability in various types of oils. In particular, the presently claimed compounds can result in high values far exceeding 100 as shown in Table 1 for IPM (isopropyl myristate), TOG (triocanoic acid glyceride), and liquid paraffin. In this connection, a higher gelling value corresponds to a higher gelling ability to obtain a hard gel. Accordingly, a gelling ability lower than 100 is insufficient for preparation of a hard gel, such as is necessary for preparation of a lipstick. Therefore, the advantageous effect of the present invention can be understood in that the compounds have a high gelling ability for various kinds of oils and, as a result, can give hard gels suitable for preparation of lipsticks having a resistance to breakage.

The advantages provided by the presently claimed invention can be seen by a direct comparison between a preferred compound from Hofrichter et al (N-lauroylglutamic acid dibutylamide; Compartive Example 3) and the closest compound within the scope of the present invention (N-decanoylglutamic acid dibutylamide; Example 6). In this comparison 0.1g of each N-acyl glutamic acid dibutylamide was added to 20g of each oil. The N-acyl

glutamic acid dibutylamide was then dissolved by heating on an oil bath at 150°C. The resulting solution was cooled for 15 hours at 23°C to obtain a gel composition. Subsequently, gel strength of each of the resulting gel compositions was measured by using a rheometer (page 13, lines 6-16).

The gelling ability of each of these compounds was determined for IPM (isopropyl myristate), TOG (triocanoic acid glyceride), and liquid paraffin as described above and the results are reported in Table 1, which is reproduced in relevant part below:

Gel composition	Acyl group	IPM	TOG	Liquid paraffin
Example 6 (present invention)	Decanoyl	120	183	154
Comparative Example 3 (Hofrichter et al)	Dodecanoyl (lauroyl)	95	116	92

What is clear from the above is that, for each of the oils tested, the claimed N-acylglutamic acid dibutylamides provide superior gelling activity irrespective of the oil selected. Such a result certainly is not apparent from the disclosure of Hofrichter et al.

Further, the N-lauroylglutamic acid dibutylamide, which is a typical example from Hofrichter et al and has a long-chain acyl group (compound A), was tested in Comparative Example 9 in the present specification. The exemplary Hofrichter et al compound was compared to a compound within the scope of the presently claimed invention: an N-2-ethylhexanoylglutamic acid dibutylamide (Example 12), i.e., a compound having a short acyl group. In this comparison, each gelling agent was dissolved in an oil by heating, then

aluminum zirconium trichlorohydrex glycine was added to the resulting solution, and the solution was cooled with stirring to obtain an antiperspirant gel stick. Gel strength of each of the resulting antiperspirant gel sticks was measured by using a rheometer (page 16, lines 1-10). The results appear in Table 3, which is reproduced in its entirety below. Also appearing in Table 3 are the additional additives that were present in the antiperspirant gel sticks, which were maintained at a constant value to ensure that the only variable for comparison is the amount of the gelling agent.

	Comparative Example 9	Example 11	Example 12
N-lauroylglutamic acid dibutylamide	2	1	-
N-2-ethylhexanoylglutamic acid dibutylamide	-	1	2
12-Hydroxystearic acid	7	7	7
Octyldodecanol	14	14	14
Cyclometicon D-5	48	48	48
Aluminum zirconium trichlorohydrex glycine	26	26	26
Gel strength (g/cm^2)	1847	2250	2650

In Table 3, the compound within the scope of the presently claimed invention (Example 12), having a shorter and branched acyl group, provided a significantly improved gel strength (g/cm^2) compared to the preferred compound of Hofrichter et al, which has a long-chain acyl group. From Table 3, it can be readily understood that the compound of the present invention

with a shorter acyl group has improved gelling properties than that of the prior know compounds having a long-chain acyl group.

Moreover, with regard to the advantageous effect of the present invention, Applicants note that the combination of the presently claimed compound (exemplified by N-2-ethylhexanoylglutamic acid dibutylamide having a short acyl group) with N-lauroylglutamic acid dibutylamide can produce even greater gelling ability (preferably when used in a 1:1 ratio) as compared to just N-lauroylglutamic acid dibutylamide alone. In particular the 1:1 ratio is superior for providing a translucent gel.

In view of the foregoing, Applicants submit that the present invention is not obvious in view of Hofrichter et al. Accordingly, Applicants request acknowledgement that this ground of rejection has been withdrawn.

With respect to the non-elected claims, Applicants note that these claims depend directly from the elected compound claims. As such, the elected compounds are required elements of the non-elected claims. Therefore, if the compound claims are found allowable, these compounds would necessarily impart novelty upon the non-elected claims and they too should be found allowable.

Applicants note that the claims have not been amended in the present response. Therefore, any new rejection would not be the result of Applicants' activities. As such, if the Examiner chooses to issue a new rejection it should be in the form of a new non-final rejection.

Applicants submit that the present application is now in condition for allowance. Early notification of such action is earnestly solicited.

Respectfully submitted,

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In re PAPESCH

(CCPA)
137 USPQ 43
Decided Mar. 20, 1963
Appl. No. 6882
U.S. Court of Customs and Patent Appeals

Headnotes

PATENTS

1. Patentability -- Invention -- Law or fact question (§ 51.507)
Issue of law is involved where claims are rejected only on ground that they are unpatentable over a single reference which discloses what is conceded to be a lower homolog of claimed compounds and proof has been given showing that representative member of group of claimed compounds possesses advantageous property shown not to be possessed by prior art compound.

2. Claims--Process (§ 20.80)

Patentability--New use or function--Process (§ 51.561)
Only way in which a "use" can be claimed is as a process.

3. Patentability--Composition of matter (§ 51.30)

Words and phrases (§ 70.)
Court agrees that such similarity in structure as exists in instant case probably indicates similarity in some undisclosed properties, but does not give too much legal significance to bare term "homolog," even where there is an admission of homology; term is often used loosely.

4. Patentability--Invention--In general (§ 51.501)
Court accepts in principle the statement that 35 U.S.C. 103 requirement of unobviousness is no different in chemical cases than with respect to other categories of patentable inventions.

5. Patentability--Invention--Law or fact question (§ 51.507)

Problem of "obviousness" under 35 U.S.C. 103 in determining patentability of new and useful chemical compounds is not a problem in chemistry or pharmacology or in any other related field of science, but is a problem of patent law.

6. Patentability--Invention--In general (§ 51.501)

35 U.S.C. 103 is statutory version of what was, prior to January 1, 1953, the judge-made requirement of "invention."

7. Patentability--Composition of matter (§ 51.30)

In re Hass, 60 USPQ 544, 548, 552, and In re Henze, 85 USPQ 261, suggest, by way of dicta, that proof of existence of unobvious or unexpected beneficial properties in a new compound, which would otherwise appear to be obvious (along with its properties), is indicative of presence of invention and hence of patentability; what this comes down to is that, if that which appears, at first blush, to be obvious though new is shown by evidence not to be obvious, then the evidence prevails over surmise or unsupported contention and a rejection based on obviousness must fall.

8. Patentability--Invention--In general (§ 51.501)

In most respects, "invention" is pre-revision equivalent of "unobviousness" requirement of 35 U.S.C. 103.

9. Patentability--Composition of matter (§ 51.30)

In re Henze, 85 USPQ 261, did not use "those skilled in the chemical art" and "chemists" in such a narrow sense as to exclude biologists, pharmacologists, medical clinicians, or any other competent trained personnel who carry on investigative work in general field of drugs.

10. Patentability--Composition of matter (§ 51.30)

Cited cases show that, both before and after enactment of 35 U.S.C. 103, courts determined unobviousness and patentability of new chemical compounds by taking into consideration their biological or pharmacological properties; patentability was not determined on basis of obviousness of structure alone.

11. Patentability--Composition of matter (§ 51.30)

It is error of law to fail to take into consideration the biological or pharmaceutical property of claimed compounds on ground that to chemists the structure of compounds would be so obvious as to be beyond doubt, and that a showing of such properties is to be used only to resolve doubt.

12. Patentability--Composition of matter (§ 51.30)

From standpoint of patent law, a compound and all of its properties are inseparable; they are one and the same thing; graphic formulae, chemical nomenclature, systems of classification and study such as concepts of homology, isomerism, etc., are mere symbols by which compounds can be identified, classified, and compared; but a formula is not a compound and, while it may serve in a claim to identify what is being patented, thing that is patented is not

formula but compound identified by it; patentability of the thing does not depend on similarity of its formula to that of another compound but of similarity of the former compound to the latter; there is no basis in law for ignoring any property in making such a comparison; an assumed similarity based on comparison of formulae must give way to evidence that assumption is erroneous.

13. Claims--Process (§ 20.80)

Patentability -- Composition of matter (§ 51.30)

Chemical compound need not be claimed as a process utilizing newly discovered property of compound, but product claims may be allowed.

14. Patentability--Composition of matter (§ 51.30)

In determining obviousness of chemical compound, there may be other factors to consider than a difference of a single advantageous property; thus, it is important if prior art disclosure is not merely of a structurally similar compound but also, at least to a degree, of the same desired property relied on for patentability in new compound; such other factor must be considered because it bears on obviousness of compound, which is, realistically and legally, a composite of both structure and properties.

Particular patents -- Trialkyl Compounds

Papesch, 2, 4, 6 - Trialkylpyrazolo [4, 3 -d] - 4,5,6,7 - Tetrahydropyrimidine - 5, 7 - Diones, claims 1 and 3 of application allowed.

Case History and Disposition:

Appeal from Board of Appeals of the Patent Office.

Application for patent of Viktor Papesch, Serial No. 836,870, filed Aug. 31, 1959; Patent Office Division 6. From decision rejecting claims 1 to 3, applicant appeals. Reversed.

Attorneys:

HELMUTH A. WEGNER, Chicago, Ill., for appellant.

CLARENCE W. MOORE (RAYMOND E. MARTIN of counsel) for Commissioner of Patents.

Judge:

Before WORLEY, Chief Judge, and RICH, MARTIN, SMITH, and ALMOND, Associate Judges.

Opinion Text

Opinion By:

RICH, Judge.

This appeal is from the decision of the Patent Office Board of Appeals affirming the rejection of claims 1-3, the only claims presented in appellant's application Ser. No. 836,870, filed August 31, 1959, for "2,4,6 - Trialkylpyrazolo [4,3 - d] - 4,5,6,7 - Tetrahydropyrimidine - 5,7 - Diones."

The specification, which is brief and occupies less than three pages of the printed record, states:

The trialkyl compounds of this invention have been found to possess unexpectedly potent anti-inflammatory activity in contrast to the related trimethyl compound. The instant compounds are also diuretic agents.

Claims 1 reads:

A compound of the structural formula

Graphic material consisting of a chemical formula or diagram set at this point is not available. See text in hard copy or call BNA PLUS at 1-800-452-7773 or 202-452-4323.

wherein R is a lower alkyl radical containing more than one and less than five carbon atoms.

Claim 2 is specific to a compound within claim 1 wherein each R is an ethyl radical (which has, inter alia, 2 carbon atoms) and claim 3 is specific to the n-butyl compound wherein the alkyl radicals each contain 4 carbon atoms. There are no other claims and the legal issue is such that it is unnecessary to distinguish between the claims.

Application Prosecution

The prosecution of this application was truly compact. On the first action the examiner rejected the claims on a single reference:

Robins et al., J. Am. Chem. Soc., Vol. 78, pp. 2418-2422 (1956)

The action is so brief and to the point that we quote it in full:

> Claims 1-3 are rejected as being unpatentable over Robins et al. Note Compound XVI. The ethyl and n-butyl side chains depicted in applicant's claims 2 and 3 are *obvious homologs of the methyl groups shown in identical positions in the reference compound* and the method of preparation is substantially the same. (In re Henze, 636 O.G. 698, 85 USPQ 261). [Emphasis added.].

Compound XVI of the Robins et al. article is described by its structural formula which would be identical with that of appellant's claim 1, supra, if all of the three R's therein were methyl, -CH 3, producing a trimethyl compound. There is textual reference to this and two other formulae, reading as follows:

> Methylation of 5,7 - dihydroxypyrazolo [4,3 - d] - pyrimidine with dimethyl sulfate in the presence of sodium hydroxide gave a compound C 8H 10O 2N 4isomeric with caffeine, presumably 1,4,6 - trimethylpyrazolo [4, 3 -d] pyrimidine - 5,7 - dione (XV), although *the possibility of the isomeric structure XVI for this compound has not been entirely eliminated.* It is interesting to note that under the conditions of the experiment only one isomer was isolated. [Emphasis ours.]

By reason of this speculation on the part of Robins et al. as to whether they really produced XV or XVI, appellant points out that what the Patent Office relies on as prior art to show obviousness of the claimed compounds is the formula considered least likely by the authors. However, we give no weight to the speculative nature of the prior art compound because we do not believe that, in final analysis, appellant does so. His brief states:

> The Robin et al. reference discloses, at best, that the lower homolog of the claimed compounds may possibly exist, as a less likely alternative, and, if it does, how it is formed.

The case is really argued, however, on the assumption that a lower homolog of the claimed compounds is in the prior art and we shall proceed on that assumption. In other words, comparing the specific compound of claim 2 with the prior art, the compounds differ only in that where appellant has three ethyl groups the prior art has three methyl groups, a total difference of three -CH 2groups. Whether this meets the usual definitions of "homology" (according to two additional references to chemical texts made of record by the Patent Office) we do not stop to consider inasmuch as appellant has not argued the point. [1] Indeed, we do not see why the Robins et al. compound XVI is not "the related trimethyl compound" referred to in the specification, quoted above.

The claims having been rejected on Robins et al., appellant responded by filing the affidavit of Dr. Francis J. Saunders (Ph.D. 1937), physiologist and a member, since 1938, of the Biology Division of G. D. Searle & Co., owner of the application at bar. Dr. Saunders has been in charge of Searle's endocrinological and related physiological research. The affidavit reports comparative tests of the Robins et al. trimethyl compound and appellant's triethyl compound which show that the latter is an active anti-inflammatory agent while the prior art compound is completely inactive in that respect. We need not examine the tests in detail because the Patent Office has accepted the factual conclusions of the affiant based on them.

[1] We have before us, therefore, a single clean-cut issue of law. The claims are rejected only on the ground that they are unpatentable over a single reference which discloses what is conceded to be a lower homolog of the claimed compounds (whether or not all chemists would so consider it) and proof has been given showing that the compound of claim 2, "a representative member of" the group of compounds claimed, possesses an advantageous pharmacological property shown not to be possessed by the prior art compound. In filing the affidavit, appellant stated in his response to the office action that the compounds of his claims 1 and 3 included more distantly related compounds than the triethyl compound tested and submitted that the showing of unpredictable and "completely dissimilar biological properties" established the patentability of the compounds he claimed.

The Examiner's Views

The reply to this first response was a final rejection stating, in pertinent part:

> The claimed compounds are obvious under 35 U.S.C. 103 in view of the reference. * * *. The affidavit is interesting but irrelevant to the rejection since it is not directed to the subject matter "sought to be patented," namely, the use in the arts of the compounds. The obvious compound is not made less obvious by its properties in an art use. * * *. It appears that if an invention is present, it resides in the use of the claimed compounds as anti-inflammatory agents and should be claimed as such. Therefore, it is held that the subject matter of the claim is obvious in view of the reference and unpatentable thereover.

[2]The applicant appealed to the board, which took no notice of the criticism that the invention should have been claimed as a "use." Before leaving this rejection, however, we make the observation that the ground of rejection seems to us somewhat confused, that it is un

clear whether the affidavit was deemed truly *irrelevant* to the patentability of the claimed *compounds,* which alone were the "subject matter sought to be patented," and unclear to what extent, if any, obviousness of the compounds was predicated on the contention that the applicant should claim his invention as a process, which is the only way a "use" can be claimed. 35 U.S.C. 100(b) and 101. The last sentence of the above quotation seems to involve a non sequitur.

The examiner who made the above rejection next filed a very long and very argumentative Examiner's Answer, which reverts to the theme that appellant's "contribution" was not in the novel compounds claimed per se, "but rather in the newly discovered properties which are advantageous for a particular utility." Said the examiner:

> Such contribution may properly be protected by claims to the mode of employing the compounds for their unexpected novel use, but does not support claims covering compounds which are structurally obvious and

which also exhibit a family of properties and characteristics common to, and not differing significantly from, those of the homologue known and available to the prior art. An unexpected difference in a single property should not be adequate to support a claim for a novel, but obvious, homologue, which claim will dominate all properties and uses of the homologue, including those differing only in the expected manner from the known product. [2]

This passage being only an expression of what might be termed the background sentiments of the examiner, the actual rejection was legally predicated by him on section 103 and its essence is contained in the following quotation:

> In view of the known general relationship of homology, the disclosure of an organic chemical structure immediately suggests and renders obvious to the organic chemist of ordinary skill its homologues, as organic compounds. The homologous compound being obvious it is not seen how it can become less obvious, *as a compound,* merely by discovering that in addition to the community of common physical and chemical properties expected of members of an homologues [sic] series it also has other improved or valuable properties. Such discovery is not proper support for a patent for the compound per se. (In re Gauerke [24 CCPA 725, 86 F.2d 330] 31 USPQ 330 and the decisions supra).

We will dispose now of the Gauerke case, which has no bearing on the issue here. It held only that it was not a patentable invention to use in an old resin composition containing drying oil, sunflower seed oil, which was *known,* and known also to be a drying oil, in place of other drying oil formerly used. The court said that incorporating sunflower

seed oil in the resin was "a use which any one skilled in the art following the teachings of the prior art, might make of it." We are here concerned with the patentability of *a new chemical compound* having an inherent *unknown,* unobvious, pharmacologically advantageous property. Furthermore, nobody would be led by the prior art to use it for any purpose, so far as the record shows.

The Board Opinion

The Patent Office, for reasons undisclosed, convened a 5-man Board of Appeals to hear this case. It adopted a relatively long opinion (9 printed pages). We have tried as best we can to extract from it the essence of the board's reasons for denying patentability, taking into consideration the supporting brief filed by the Patent Office Solicitor. We believe the reasoning to be along these lines:

[4] 1. The section 103 requirement of unobviousness is no different in chemical cases than with respect to other categories of patentable inventions. (We would accept that, in principle.)

2. From the viewpoint of the organic chemist the structures of the claimed compounds would be "obvious" from the Robins et al. reference disclosure of the related trimethyl compound as well as from the disclosure of methylation by conventional methods, which would suggest to a chemist "the use of ethylating or other alkylating agent of short chain length" as a possibility.

3. Appellant relies on a *pharmacological* property as the significant characteristic.

4. The statutory unobviousness required of a claimed chemical compound to make it patentable must be "considered from a chemical viewpoint," i.e., from the viewpoint of chemists rather than pharmacologists, inasmuch as it is the chemists "who are involved with the synthesis of new compounds, and in their identification by physical characteristics and by reactions with other agents."

5. In conclusion the board said:

> We have considered the facts in this case from the viewpoint of the chemist and find that the compounds would, without a shadow of doubt, be obvious to the chemist from the disclosure in the Robins et al. publication. In these circumstances, the showing made in the affidavit cannot be considered persuasive of patentability.

As in the case of the examiner's rejection, it is not clear from the above quotation whether or not the affidavit showing was ignored on the ground that the compounds would be obvious to a chemist, or because it did not relate to "chemical" properties. The solicitor argues that the above quoted paragraph shows that the board "weighed the effect of the affidavit" but he also says that the board considered that the homologous relationship and the "chemical facts" made the claimed compounds "so obvious * * * that the showing of the affidavit was *ineffective by itself* to demonstrate the unobviousness of the claimed compounds." (Our emphasis.) Probably the best indication of how the board itself looked upon the affidavit is this paragraph from its opinion:

> Such proof of advantages is not seen to occupy a different relationship than proof of commercial success or of the "filling of a long-felt want" often considered as sufficient to establish patentability in cases *where some doubt of unobviousness exists,* but which have been consistently held as *insufficient alone* to override the holding of unpatentability *in a clear case* of obviousness. [Emphasis added.]

In view of that statement, and since the board found the compounds to be obvious "without a shadow of doubt," we are bound to conclude that the board's process of reasoning was first to look at the compounds as chemists to see if they were obvious and, having no doubt that they were, it found no reason to consider the "pharmacological" facts shown by the affidavit, the existence of which facts has never been questioned. This conforms with the solicitor's oral argument which asked us to ignore the pharmacological properties on the ground that the claimed compounds were "so obvious."

Opinion

[5] The problem of "obviousness" under section 103 in determining the patentability of new and useful chemical compounds, or, as it is sometimes called, the problem of "chemical obviousness," is not really a problem in chemistry or pharmacology or in any other related field of science such as biology, biochemistry, pharmacodynamics, ecology, or others yet to be conceived. It is a problem of *patent law.*

[6][7] As everyone knows, section 103 is the statutory version of what was, prior to January 1, 1953, the effective date of the latest revision of the patent statutes, the judge-made requirement of "invention." We are not unaware that we are, in this case, in the field of what has come to be called the "Hass-Henze Doctrine," though the briefs do not men

tion it by name. [3] The Hass and Henze cases, which *are* mentioned, ante- date section 103 and suggest, by way of dicta, that proof of the existence of unobvious or unexpected beneficial properties in a new compound, which would otherwise appear to be obvious (along with its properties), is indicative of the presence of "invention" and hence of patentability. What this comes down to, in final analysis, is a rather simple proposition: If that which appears, at first blush, to be obvious though new is shown by evidence *not* to be obvious then the evidence prevails over surmise or unsupported contention and a rejection based on obviousness must fall. Many cases, both before and after the enactment of section 103, have been decided according to such reasoning and we shall now discuss a few of them.

Schering Corp. v. Gilbert, 153 F.2d 428, 68 USPQ 84 (CCA 2d), was decided in 1946. The claim sustained was to a specific chemical compound. It was proved to possess unobvious and highly useful properties as an X-ray contrast agent in cholecystography. The court characterized the claimed invention, "a short claim for one definite chemical compound not found in nature and never previously synthesized," as a "seemingly slight departure from the old." Its approach to the question of patentability was stated thus (68 USPQ at 86):

> * * * it is necessary to understand what the inventors did as well as what they sought to accomplish and *give recognition to their end result* as a novel and useful improvement, *not in the art of organic chemistry but in that of cholecystography.* [Emphasis added.]

In Parker v. Marzall, 92 F.Sup. 736, 86 USPQ 446 , a suit underR. S. 4915 decided in 1950, the District Court for the District of Columbia entered, among others, the following findings of fact and conclusion of law after having

filed an "Informal Memorandum." The findings of fact read (86 USPQ at 447):

> 7. The compound of plaintiffs' claim 2 is the next adjacent homologue of the compound of said Bayer and Dahlen [prior art] patents. [An ethyl substituent on a ring where the references had methyl.]
>
> 8. The compound of plaintiff's claim 3 is the next adjacent homologue of the compound of plaintiffs' claim 2 [ethyl in place of methyl as another ring substituent]. * * *
>
> 11. The evidence produced at the trial proves that the compounds claimed by the plaintiffs possess some unobvious and unexpected beneficial properties not possessed by the homologous compound disclosed in the prior art defense patents.

Conclusion of law:

> 2. In view of the evidence of unobvious unexpected and beneficial properties of the compounds of plaintiffs' claims 1, 2 and 3 not possessed by the homologous compound disclosed in the prior art, such claimed compounds constitute patentable invention. In re Hass et al., 141 F.2d 122, 60 USPQ 544 , (CCPA 1944).

The unobvious advantages here involved were found in yellow azo pigments made from the claimed compounds as intermediates.

In In re Schechter et al., 40 CCPA 1009, 205 F.2d 185, 98 USPQ 144 (June 1953), this court reversed a rejection of claim 48 to a group of compounds (cyclopentenolones) which had been rejected as unpatentable over a prior art isomer. Biological function was taken into account in deciding in favor of patentability as shown by the following quotation (98 USPQ at 150):

> We are convinced after a review of the record herein that, as appellants contend, there is a considerable degree of unpredictability in the insecticide field with homologs, isomers and anologs of known effective insecticides having proven ineffective as insecticides. In view of this, and the other factors previously discussed, we conclude that all the compounds of the subgroup in Markush claim 48 are inventive and patentable over the prior art of record, albeit they include isomers and homologs of the compounds shown in LaForge et al. Considering the history of the art at the time of the invention, and its success, we think such a conclusion unavoidable.

[8] Though the Patent Act of 1952 had just become effective and the court recognized its existence in referring to section 112, no mention was made of section 103 or the necessity of finding "unobviousness." The court was still speaking in terms of the requirement of "invention," its pre-revision equivalent in most respects. The court had previously stated, referring to In re Hass and another case, "We also implicitly indicated in the decisions here cited that homologs and isomers may be patentable if they are inventive over known prior art compounds," citing Parker v. Marzall, supra, with evident approval.

In Ruskin v. Watson, 123 F.Supp. 33, 101 USPQ 275 , the District Court for the District of Columbia decided in favor of patentability of a compound differing structurally from a compound already patented to the plaintiff only in the substitution of two ethyl groups in place of two hydrogen atoms. The compound was a therapeutic preparation used to control muscular spasm. The court, at page 276 of 101 USPQ quoted with approval the following dictum from the opinion of this court in the Henze case (footnote 3, supra):

> To those skilled in the chemical art, one homologue is not such an "advance" over an adjacent member of the series as requires invention, unless the beneficial properties realized in the new homologue lie clearly outside of the expectations which knowledge of his science would inform the trained chemist should be inherent in the product. [4]

Finding that the claimed product had been shown by evidence to possess unobvious and unexpected beneficial

properties not possessed by the previous patented compound, the court disapproved of the rejection and held the two compounds patentably distinct.

The same court in Sterling Drug Inc. v. Watson, 135 F.Supp. 173, 108 USPQ 37 , gave judgment, in part, for plaintiff against the Commissioner of Patents in a suit under 35 U.S.C. 145 to obtain a patent on claims to levo-arterenol and dextro-arterenol. The prior art showed the racemic dl-arterenol and also the known next adjacent homologs of the claimed substances. The court found that "The evidence at the hearing abundantly supports the contention of the plaintiff that l-arterenol in the form here claimed has phenominal therapeutic properties with respect to the treatment of irreversible shock and coronary occlusion. * * * These qualities are utterly unattainable either by the dl-compound, from which the pure l-arterenol is derived, or the admixture of l-arterenol with its homologues." The court said (108 USPQ at 38-39):

> And there can hardly be any serious question that these beneficial characteristics were both unexpected and unobvious, which is the test to be applied in the matter of the patentability of a compound that is a homologue of another.
>
> I have no hesitancy in reaching the firm conclusion that the l-arterenol * * * and the acid salt of l-arterenol * * * and the l-arterenol acid d-tartrate * * * are patentable. There is a difficulty with respect to claim 10, and that is that it also includes the claim to d-arterenol, and there has been no showing of any beneficial unexpected and unobvious properties of d-arterenol, and I, therefore, cannot conclude that d-arterenol is patentable.

It is interesting to observe here the applied principle working both ways. Where what we may call the apparent obviousness of the compound (including its properties) was overcome by evidence of unexpected advantageous properties the claim to it was held patentable; but where no such properties were shown to exist it remained an obvious compound with obvious properties.

In re Bergel et al., 48 CCPA 1102, 292 F.2d 955, 130 USPQ 206 , involved, inter alia, claims to chemotherapeutic agents rejected as unpatentable over the prior art. As to the position of the Patent Office on the closeness of the claimed compounds to the prior art, the opinion of the court says (130 USPQ at 207):

> The examiner states that the compound of claims 1 and 2 is "a chlorine analog" of the Harper et al. compound, by which he apparently means that a part of the hydrogen of the Harper

> et al. compound is replaced by chlorine to form the claimed compounds. The examiner further noted that Everett et al. disclose compounds generally similar to those claimed by appellants and prepared by chlorination, and propose the use of such compounds in anti-tumor therapy.

In reversing the rejection the opinion says:

> It is true that Harper et al. disclose compounds which, by the substitution of chlorine, a halogen, for part of the hydrogen, may be converted to the compounds recited in appealed claims 1 and 2, but, in our opinion, *such conversion would not be obvious in the absence of any suggestion in the prior art as to why it should be made.* [Emphasis added.]

And further (130 USPQ at 208):

> The mere fact that it is *possible* to find two isolated disclosures which might be combined in such a way to produce a new compound does not necessarily render such production obvious unless the art also contains something to suggest the desirability of the proposed combination.

In re Larsen, 49 CCPA 711, 292 F.2d 531, 130 USPQ 209 (cert. denied, 133 USPQ 703), was an appeal taken only on process claims, claims to the product made by the process having been allowed. The appellant's arguments drew into consideration by the court, however, the patentability of the products, as to which Chief Judge Worley made the following observations (130 USPQ at 210) which are relevant here:

> * * * the allowance of the claims to the compounds was based on the fact that they possessed unique, and presumably unexpected, properties. *Since there was nothing to indicate that the compounds, when made, would have these properties, it was not obvious to make the compounds.* In such a case the allowance of claims to the compounds must depend on the proposition that *it was unobvious to conceive the idea of producing them,* within the meaning of Title 35 U.S.C., Section 103. [Emphasis added.] [5]

The writer, in a concurring opinion, made the following observation (130 USPQ at 213):

> There is a certain amount of logic in holding a product to be unobvious because of the discovery in it of unobvious properties, such as its ability to act as a non-toxic X-ray contrast agent, *because the properties inhere in the product.* [Emphasis added.]

In re Lambooy, 49 CCPA 985, 300 F.2d 950, 133 USPQ 270 , reversed the rejection of a single claim to an isoalloxazine compound. The decision was not handed down until after the briefs herein were filed. The only difference between the claimed compound and the prior art compound, riboflavin, was very much like the difference here--where riboflavin had two methyl groups, the claimed compound had two ethyl groups. It differed from riboflavin in a "pharmacological" property; where riboflavin acted in the animal body as a metabolite, the claimed compound, in spite of its "structural similarity," acted as an antimetabolite. Judge Martin, speaking for a unanimous court, said (133 USPQ at 274):

> A comparison of the structural formulas of these two compounds shows clearly that there is substantial *structural* similarity. But more appears from the facts of this case than structural similarity, facts which raise genuine questions as to the real significance of such bare *structural* similarity, whatever label may be attached to it.
>
> * * * There is no evidence *in the record* which would lead one skilled in this art to expect that the differences in molecular structure between riboflavin and appellant's compound would cause this difference in properties.

The next two quotations are so apt with respect to the arguments brought before us in the present case as to sound almost repetitious. We said in the Lambooy case:

> The solicitor urges that "there is no specific evidence in the record of differences in *chemical* and *physical* properties of the prior art compound [riboflavin] and the claimed compound." In view of the bio-chemical differences which we have just dis

> cussed, we can only assume the solicitor is urging that while differences in *chemical* properties might be persuasive of patentability of the claimed compound, differences in *biochemical* [original emphasis] properties are not to be considered. *We see no reason to distinguish between chemical and bio-chemical properties and no reason or authority for this position has been presented to us.* [Emphasis added.]
>
> At the most, we think one skilled in this art would be taught by the reference patents that other groups than those present in the riboflavin structure can be attached to the parent isoalloxazine structure. We doubt that this fact is a noteworthy addition to the knowledge of an organic chemist of ordinary skill *because he knows this is true of all such parent chemical structures.* Though *this* would be obvious to him, it does not follow that all new *compounds* so produced would be *obvious in the sense of the patent law.* [Emphasis added.]

In re Petering and Fall, 49 CCPA 993, 301 F.2d 676, 133 USPQ 275 , also dealt with compounds stated to have antimetabolite activity as riboflavin antagonists. The rejection of claims 5, 11, and 12 on art was reversed. Judge Martin, again speaking for a unanimous court, said (133 USPQ at 281):

> Although it is also true that some of the specific compounds of Karrer [the reference] * * * are *structurally rather similar* to the compounds defined in claims 5, 11 and 12, * * * there is a *significant difference in properties* between appellants' compounds and Karrer's compounds. [Emphasis added.]

> We do not agree with the board that the unexpected properties of the compounds defined in claims 5, 11 and 12 should not be considered in determining the patentability of these claims. The compounds are not *described* in Karrer within the meaning of 35 U.S.C. 102(b). In determining whether the claimed compounds are *obvious* within the meaning of 35 U.S.C. 103, we think their properties may and should be considered, and having considered the properties, we are convinced the compounds * * * are patentable over Karrer.

In that case, the board had taken essentially the same position it took in the present case, saying, "we are not convinced that the ascertainment of the property referred to could make such obvious compounds unobvious as compounds."

[10] From the foregoing cases it will be seen that this and other courts, both before and after the enactment of section 103, have determined the unobviousness and patentability of new chemical compounds by taking into consideration their biological or pharmacological properties. Nine of the ten cases above considered, directly and indirectly, involved such properties. Patentability has not been determined on the basis of the obviousness of structure alone. In fact, where patentability was found in the above cases it was found in spite of close similarity of chemical structure, often much closer similarity than we have here.

[11] Returning now to the decision of the board in this case, we think that it rests on one fundamental error of law, namely, the failure to take into consideration the biological or pharmaceutical property of the compounds as anti-inflammatory agents on the ground that to chemists the structure of the compounds would be *so* obvious as to be beyond doubt, and that a showing of such properties is to be used only to resolve doubt.

[12] From the standpoint of patent law, a compound and all of its properties are inseparable; they are one and the same thing. The graphic formulae, the chemical nomenclature, the systems of classification and study such as the concepts of homology, isomerism, etc., are mere symbols by which compounds can be identified, classified, and compared. But a formula is not a compound and while it may serve in a claim to *identify* what is being patented, as the metes and bounds of a deed identify a plot of land, the *thing* that is patented is not the formula but the compound identified by it. And the patentability of the thing does not depend on the similarity of its formula to that of another compound but of the similarity of the former compound to the latter. There is no basis in law for ignoring any property in making such a comparison. An assumed similarity based on a comparison of formulae must give way to evidence that the assumption is erroneous.

The argument has been made that patentability is here being asserted only on the basis of *one* property, the anti-inflammatory activity, and that the compounds claimed and the compound of the prior art presumably have many properties in common. *Presumably* they do, but presumption is all we have here. The same is true of all of the compounds of the above cases which were held

patentable over compounds of the prior art, many of which must have had more in common by way of properties than the compounds here because the relationships, structurally, were even closer than here.

[13] As to the examiner's view that in a case such as this the applicant should claim his invention as a process utilizing the newly discovered property, the board appears to have ignored it, properly we think. It is contrary to practically all of the above decisions wherein no fault was found with granting product claims. Such claims have well-recognized advantages to those in the business of making and selling compounds, in contrast to process-of-use claims, because competitors in the sale of compounds are not generally users.

[14] The solicitor relies heavily on In re Finley and similar cases which we will now consider, arguing that there may be other factors to consider than a difference of a single advantageous property, which is true.

In re Finley, 36 CCPA 998, 174 F.2d 130, 81 USPQ 383 (1949), was an appeal on a single claim reading: "As a composition of matter, 2 ethyl hexyl salicylate." It was held unpatentable over several references which admittedly disclosed homologs and at least one isomer whose salts were all used as lubricant "additants," the same use disclosed

for salts of the claimed compound. An affidavit was submitted in the case showing that the calcium salt of the claimed compound had two to three times the thermal stability as lubricant "additant" as the calcium salt of the prior art isomer n-octyl salicylate. The board held the tests made on the calcium salts too remote, affirming the examiner who had said:

> But to assert that the property of the salt or of the oil is the property of the ester is clearly a confusion of the issue.

The pasage in the Finley opinion relied on by the Patent Office is (81 USPQ at 386):

> Obviously appellant construes our holding in those [Hass et al.] cases to mean that if a new and useful product does show unobvious or unexpected beneficial properties it follows that such a product is patentable. We did not affirmatively, or even by implication, so state in our decisions there. Our statement meant merely that unless a product does show the defined characteristics it is not patentable. Even if they be shown, the consideration of other factors may be required. As we said in our decision in the second Hass et al. case, supra, "Whether novel chemical compounds are patentable over prior art isomers and homologues is a question to be determined in each case."

The principle of the above passage was also reiterated the next year in In re Henze, 37 CCPA 1009, 181 F.2d 196, 85 USPQ 261 , in the following words (85 USPQ at 264-265):

> Patentability is not resolved conclusively even where unexpected or unobvious beneficial properties are established to exist in novel members of a homologous series over prior art members, as the circumstances of the case *may* require a consideration of other factors. [citing Finley] *A mere difference in degree* is not the marked superiority which ordinarily will remove the unpatentability of adjacent homologues of old substances. In re Loring Coes, Jr., supra [36 CCPA 1067, 173 F.2d 1012, 81 USPQ 369]. [Emphasis added.]

In the Loring Coes case the invention was an abrasive grinding wheel. It was specifically found that "the improvement, if any, is one of degree viewed only from a single aspect." The new grinding wheel was shown to wear longer, but the old wheel was shown to be more efficient in the amount of metal removed per unit of time. The invention related to the synthetic resin binder in the wheel which differed only slightly in composition from prior resin binders, the difference residing only in the hardening agent used. The hardener selected differed from a known prior art *hardening agent* only by the omission of one -- CH_2group out of six, found in triglycol dichloride, and was held to be an unpatentable selection.

The other factor of importance which was present in the Finley, Henze, and Coes cases and others of their type is that the prior art disclosure was not merely of a structurally similar compound but also, at least to a degree, of *the same desired property* relied on for patentability in the new compound. Such an "other factor" must of course be considered because it bears on the obviousness of the compound, which is, realistically and legally, a composite of both structure and properties.

As should be apparent from the foregoing, we regard the board's opinion and decision as contrary to well established law. We see no reason to change that law. The decision is therefore *reversed.*

Footnotes

Footnote 1. In this connection, see "The Forgotten Chemistry of the Hass-Henze Doctrine," by Bruce M. Collins, Journal of the Patent Office Society, April, 1962, Vol. XLIV, No. 4, page 284. Note also that in the first office action the examiner did not say that appellant's *compounds* are homologs of the Robins et al. compound XVI. He said, "The ethyl and n-butyl *side chains* * * * in applicant's claims * * * are obvious homologs *of the methyl groups* * * * in the reference * * *." [Emphasis ours.]

Footnote 2. [3] It is noted that certain supposed facts are here being assumed. It is true that the applicant submitted proof as to only one unexpected, unobvious, beneficial property. The examiner's statements about the existence of a family of other properties common to the claimed compounds and the compound of the prior art finds support in the

record, however, only on the basis of assumptions in turn based on assumed "homology." In his answer, the examiner cited a new reference, Wertheim "Textbook of Organic Chemistry" (2d Ed.), page 37 (1945). From it he quoted the following statement about members of "any one homologous series:"

> These compounds have similar chemical traits, because their structures are closely related; therefore we can learn the chemistry of the entire group with no more effort than would otherwise be required to study a single compound.

He had previously cited in his final rejection another new reference, Fieser and Fieser, "Organic Chemistry," 3d Ed. pages 30-31 (1956), which pages deal, so far as pertinent, only with the progressive relationships in the C_nH_{2n+2} homologous series, with bare mention of similar relationships existing in the halogens: chlorine, bromine, and iodine.

Wertheim, at the point from which the above quotation was taken, was discussing the same "methane series of hydrocarbons" as Fieser and Fieser. The examiner stopped his quotation just before the sentence reading, "Of course we may anticipate certain 'exceptions' to this general rule, but such exceptions will make very little trouble." We are not here dealing with the methane series or with the type of "homology" which it illustrates.

We have had sufficient contract with "homology" on this court to agree with the examiner that such similarity in structure as exists here *probably* indicates similarity in *some* undisclosed properties; but we are past giving too much legal significance to the bare term "homolog," even where there is an admission of homology, as there appears to be here. The term is often used loosely. So far as we know, the *assumed* similarities referred to by the examiner are of little or no practical or commercial significance. Certainly he has pointed to none. On the other hand, the *proven dissimilarity* is a matter of pharmacological significance, on which the examiner would be quite willing to grant a patent if the invention were claimed as a process. As to the *other* properties, nothing in the record gives us any information, not even the Robins et al. reference.

Footnote 3. This "doctrine" was evolved by the bar from this court's opinions in the three cases called In re Hass et al., 31 CCPA 895, 903, 908, 141 F.2d 122, 127, 130, 60 USPQ 544, 548, , and in In re Henze, 37 CCPA 1009, 181 F.2d 196, 85 USPQ 261 . See "The Hass-Henze Doctrine," by Alvin Guttag, Dec. 1961 JPOS, Vol. XLIII, No. 12, p. 808. This article commences with a discussion of what is meant by "homolog" and sets forth a definition which would exclude the compounds involved in the present case. In spite of all the talking and writing on the subject, we are not quite sure what the doctrine is but, whatever it is, insofar as the Hass and Henze cases are concerned, it appears to be based on dicta, since all of those cases affirmed the Patent Office rejections. For some observations on the limitations of the Henze case and the significance of homology, see In re Victor Mills, 47 CCPA 1135, 281 F.2d 218, 126 USPQ 513 .

Footnote 4. [9] We are sure that our predecessors in here referring to "those skilled in the chemical art" and to "chemists" were not, in the Henze case, using these terms in any such narrow sense as the board is doing in the instant case, so as to exclude biologists, pharmacologists, medical clinicians, or any other competent trained personnel who carry on investigative work in the general field of drugs, for the subject matter being discussed in that case, both prior art and claimed, was certain compounds having, or alleged to have, hypnotic, soporific or narcotic effect. The case went off on failure to prove that the claimed compound and the next adjacent homolog (in the strict sense of differing by one $-CH_2$ group) did *not* have the same advantageous high anticonvulsant activity with low toxicity which the examiner contended would be expected.

Footnote 5. None of the opinions in this case show, specifically, what the claimed compounds are useful for. The specification of the appealed application states the utility as follows:

> My new compounds are useful as X-ray contrast agents and are particularly valuable for visualizing the bronchial tree (bronchography), and for hepatolienography (visualization of the liver and spleen).

At least in the latter use the compounds would have to be ingested and to reach the liver and spleen by biological

body processes. This is in the field of what the board deemed to be pharmacology rather than chemistry.

Concurring Opinion Text

Concur By:

WORLEY, Chief Judge, concurs in result only.

- End of Case -

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U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences
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Mailed June 5, 1990
No. 89-2432

Headnotes

PATENTS

1. Patentability/Validity - Anticipation - Prior art (§ 115.0703)

Applicant's claim for chemical compound is anticipated by prior art reference, since it is undisputed that synthetic procedures disclosed in reference enable preparation of compound also disclosed therein, and that name of compound thus disclosed corresponds to formula presented in applicant's claim; listing of forty-five additional compounds in reference does not change this outcome, since comprehensiveness of reference does not derogate from its teaching effect, and listing thus "describes" each of those compounds within meaning of 35 USC 102(a).

2. Patentability/Validity - Anticipation - Prior art (§ 115.0703)

Application claim which broadly recites claimed chemical compounds as "an antibacterial composition," is anticipated by reference which discloses forty-six compounds as having "antibacterial activity" and as being "meant for use as active compounds in medicaments," and which further expressly discloses various types of specific pharmaceutical compositions utilizing various acceptable carriers, since nature of disclosure is such that reference should appropriately be considered to "describe" each of compounds disclosed within meaning of 35 USC 102.

3. Patentability/Validity - Obviousness - Relevant prior art - Particular inventions (§ 115.0903.03)

Examiner improperly rejected claimed antibacterial compound as obvious, even though applicant's claims are prima facie obvious in view of primary reference, since examiner required applicant to prove that claimed compound is unexpectedly different from compounds of reference in its therapeutic effect against all bacteria in order to rebut evidence of obviousness, whereas applicant's contention that claimed compound is unexpectedly and significantly superior against anaerobic bacteria only is conceptually sufficient to overcome prima facie case, and since record shows that claimed compound is in fact significantly more active against anaerobic bacteria than closest compound of reference, and that such superiority was unexpected.

Case History and Disposition:

Appeal from final rejection of claims in patent application (Donald G. Daus, supervisory primary examiner; E. Bernhardt, examiner).

Patent application serial no. 834,577, filed Feb. 28, 1986 (quinolonecarboxylic acid derivative and process for its preparation). From final rejection of all pending claims, applicant appeals. Affirmed.

Attorneys:

Richard D. Kelly, of Oblon, Fisher, Spivak, McClelland & Maier, Arlington, Va., for appellants.

Judge:

Before Goldstein, Metz, and Wiseman, examiners-in-chief.

Opinion Text

Opinion By:

Goldstein, examiner-in-chief.

This appeal was originally taken from the examiner's final rejection of claims 1, 3, and 4. Subsequently claim 4 was cancelled. Although, at the beginning of appellants' appeal brief, it is stated that this appeal is "from the final rejection of all claims pending in this application," claim 3 was not reproduced in the brief on appeal. The examiner assumed that this omission was inadvertent but, by implication from the fact that claim 3 has not been argued separately in the brief, and from statements made upon oral hearing of this appeal, it appears likely that the rejection

of claim 3 was not intended to be appealed. Nonetheless, in the event that we are mistaken in drawing this inference, we shall treat claim 3 as being on appeal. Because, as we have already indicated, no separate arguments have been presented, claim 3 may be considered to stand or fall with claim 1. *In re King,* 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986); *In re Burckel,* 592 F.2d 1175, 201 USPQ 67 (CCPA 1979). Even so, for the sake of completeness, we shall address specific remarks to the patentability of claim 3 in this decision.
References relied on by the examiner on appeal are:

Culbertson et al. (Culbertson)	4,638,067	Jan. 20, 1987
Petersen et al. (Petersen) (European patent specification)	167,763	Jan. 15, 1986
Irikura (Great Britain)	2,057,440	Apr. 1, 1981

Claims 1 and 3 have been finally rejected under 35 U.S.C. §102(a) as being anticipated by Peterson. We shall affirm this rejection.
All page references in the following discussion shall be to the English language translation of record (apparently supplied by appellants) of the European patent specification, which was originally published in German.
All page references in the following discussion shall be to the English language translation of record (apparently supplied by appellants) of the European patent specification, which was originally published in German.
The examiner has adequately explained the basis of the conclusion that the reference anticipates the appealed claims and sufficiently convincingly rebutted all of appellants' arguments that we could simply adopt the examiner's position as our own, adding no further comment. However, since appellants have expressly invited us to decide what they consider to be "a significant policy question," 1 we feel constrained to present additional comments, both to emphasize those aspects of the examiner's position with

which we agree and for the sake of completeness.
[1] Appellants have acknowledged (at least implicitly on the written record and expressly upon oral hearing) that the synthetic procedures disclosed in the reference enable the preparation of the compound [* * *], which is explicitly disclosed at page 13 of the reference. It has not been controverted that the name of the compound disclosed corresponds to the formula presented in appellants' claim 1. Thus, even if there were no disclosure of utility in the reference, the examiner would have been correct in holding that the claim was anticipated, and the examiner's citation of *In re Hafner,* 56 CCPA 1424, 410 F.2d 1403, 161 USPQ 783 (1969) would have been quite appropriate. Since the reference does disclose a specific utility for the compound (generally the same utility as in the present case), this issue does not arise (but see the discussion of Claim 3, below).
We find only twenty-two compounds in the list presented at pages 12 to 14, disclosed in addition to those listed in the working examples, and not twenty-three as found by the examiner. There are twenty-four compounds disclosed in the working examples. In either event, forty-six or forty-seven compounds hardly amounts to the "list of thousands" referred to in *In re Wiggins,* 488 F.2d 538, 543, 179 USPQ 421, 425 (CCPA 1973), relied on by appellants. Furthermore, as the examiner has correctly pointed out, the critical issue in *Wiggins* was whether or not the name of a compound was a description of that compound in the absence of a known synthetic method of producing that compound. That issue does not arise on the present facts.
Even if the number of compounds disclosed in the reference were several orders of magnitude greater, we would come to the same conclusion. The tenth edition of the *Merck Index* lists ten thousand compounds. In our view, each and every one of those compounds is "described," as that term is used in 35 U.S.C. §102(a), in that publication. A similar conclusion would be appropriate with respect to the approximately 1.5 million compounds disclosed in the *Beilstein Handbook* (Handbuch der Organischen Chemie). As a general principle it has long been held, even where

the issue was one of obviousness and not clear anticipation or description, that the comprehensiveness of a reference disclosure does not derogate from its teaching effect. *Merck Co. v. Biocraft Laboratories, Inc.*, — F.2d —, 10 UPSQ2d 1843 (Fed. Cir. 1989); *In re Corkill,* 771 F.2d 1496, 226 USPQ 105 (Fed. Cir. 1985). *In re Susi,* 58 CCPA 1074, 440 F.2d 442, 169 USPQ 423 (1971); *In re Lemin,* 51 CCPA 1404, 332 F.2d 839, 141 USPQ 814 (CCPA 1964); *In re Rosicky,* 276 F.2d 656, 125 USPQ 341 (CCPA 1960).

With regard to the numerous other precedents discussed by appellants, they invariably deal with a significantly different set of facts. In each case, to arrive at the claimed subject matter, it was necessary to select portions of that subject matter from various sections of the reference disclosure and combine them 2 , *e.g.*, selecting values for variable substituents to interpolate into a generic structural formula to arrive at a specific compound. Even in those cases, if the classes were sufficiently limited or well delineated, anticipation was found. Compare *In re Arkley,* 455 F.2d 586, 172 USPQ 524 (CCPA 1972), with *In re Sivaramakrishnan,* 673 F.2d 1383, 213 USPQ 441 (CCPA 1982); *In re Schaumann,* 572 F.2d 312, 197 USPQ 5 (CCPA 1978); *In re Petering,* 301 F.2d 676, 133 USPQ 275 (CCPA 1962).

Of course, it goes without saying (but, equally of course, we are going to say it) that the evidence of asserted unobvious results of record is not relevant to this rejection. *In re Malagari,* 499 F.2d 1297, 182 USPQ 549 (CCPA 1974).

[2] Claim 3, which recites "an antibacterial pharmaceutical composition" broadly, may or may not be intended to be on appeal, as we have discussed above, and no separate arguments have been drawn to this claim. Nonetheless, we shall indicate our reasons for considering the above comments to apply to essentially the same degree to the rejection of claim 3, for the sake of completeness of this record, in the event, for example, that further appeal should be taken from this decision.

As we have stated above, there are only forty-six (or forty-seven) compounds described specifically in the reference. The compounds are disclosed as having "antibacterial activity" and being "meant for use as active compounds in medicaments" (see Item 57 on the title page). Various types of specific pharmaceutical compositions utilizing various acceptable carriers are expressly disclosed at pages 28 to 30. The nature of this disclosure is such that we are convinced that this reference should appropriately be

considered to "describe," in the sense of 35 U.S.C. §102, pharmaceutical compositions containing each of the forty-six (or forty-seven) specific, pharmaceutically active compounds disclosed. Again, compare *Arkley* with *Sivaramakrishnan, Schaumann* and *Petering.*

Claims 1 and 3 have been finally rejected under 35 U.S.C. §103 as being unpatentable over Culbertson in view of Irikura. We shall not affirm this rejection.

On the issue of *prima facie* obviousness, we would have found the examiner's conclusion to be supported by the disclosure of Culbertson alone. That disclosure is generic to the here claimed subject matter, and the species of Example 45 differs from appellants' claimed compound only in having an 8-fluoro substituent in place of an [* * *] substituent.

[3] With regard to this rejection under 35 U.S.C. §103, appellants' evidence of asserted unobvious results is relevant. We have considered that evidence, specifically the declaration of Irikura, under 35 CFR 1.132, and we disagree with the examiner's conclusion. It is the examiner's position that, to rebut the evidence of obviousness, it is necessary for the claimed compound to be unexpectedly different from the reference compounds "overall," i.e., in its therapeutic effect against all bacteria. However, appellants' thesis is that their compound is unexpectedly and significantly superior against anaerobic bacteria, a property which makes it unexpectedly suited for a specific, important utility. Conceptually, this can be the basis for overcoming a *prima facie* case of obviousness. *In re Chupp,* 816 F.2d 643, 2 USPQ2d 1437 (Fed. Cir. 1986); *In re Murch,* 464 F.2d 1051, 175 USPQ 89 (CCPA 1972). The issue in each case is the weight of the actual evidence of unobviousness presented, balanced against the weight of obviousness of

record.
In the declaration (page 2, first complete paragraph), it is indicated that a difference in minimum inhibitory concentration of a factor of two is considered to be "activity ... on the same level." Even when this consideration is taken into account, however, appellants' claimed compound is significantly more active 3 against the first seven species of anaerobic bacteria listed in Table 1-b. Furthermore, Figures 1a and 1b illustrate that appellants' compound, when administered in the same dosage, provides substantially higher serum levels, for at least two hours at low doses and a substantially longer period of time at higher doses. In the absence of any explanation to support a holding to the contrary, we accept the conclusion at page 11 of the declaration that the evidence indicates "superiority" and that the "superiority was unexpected." In view of the precedents cited above, we find this evidence of unexpected superiority adequate to outweigh the evidence of obviousness found in the references adduced by the examiner.
The decision of the examiner is affirmed.
No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR 1.136(a). See the final rule notice, 54 F.R. 29548 (July 13, 1989), 1105 O.G. 5 (August 1, 1989).
AFFIRMED.

Footnotes

Footnote 1. The "policy question" appears to be whether or not the Patent and Trademark Office shall continue to interpret 35 U.S.C. §102(a) literally.
Footnote 2. Somewhat reminiscent of the lexicographer who described his dictionary as "a poem about everything," but clearly not the case here.
Footnote 3. When compared to the compound of Culbertson Example 45, which the examiner agrees is the closest prior art compound of record.

- End of Case -

